

REMARKS

Reconsideration of the above-identified application in view of the present amendment is respectfully requested. By the present amendment, claims 1, 5, and 8 have been amended to include the limitation that the apparatus includes an ignition material for igniting the gas generating material. Support for this limitation can be found on page 13, lines 22-24, and page 17, line 24-page 18, line 1. The amendment was made to claims 1, 5, and 8 to better define the invention recited in claims 1, 5, and 8 and to further define the invention over the newly cited art. The amendment was not made earlier because the amendment is in response to the newly cited art.

Below is a discussion of the 35 U.S.C. §103(a) rejection of claims 1-8.

35 U.S.C. §103(a) Rejection

Claims 1-8 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 3,895,821 to Schotthoefer et al., Meyer: Handbook of Explosives, U.S. Patent No. 5,626,360 to Lauritzen et al., U.S. Patent No. 3,899,973 to Brocart, U.S. Patent No. 4,326,901 to Leneveu et al., and U.S. Patent No. 4,842,658 to Boileau et al.

Claim 1 recites an apparatus comprising a vehicle occupant protection device, a gas generating material, and an ignition material for igniting the gas generating material. The gas generating material upon combustion produces a gas product that actuates the vehicle occupant protection device.

The gas generating material comprises a single-base composition that includes greater than 2%, by weight of the single-base composition, stabilizer. The stabilizer is a urea of an aromatic amine. The gas generating material is free of an energetic plasticizer.

Claim 1 is patentable over Schotthoefer et al. in view of Meyer, Lauritzen et al., Brocart, Leneveu et al., and Boileau et al. because Schotthoefer et al. in view of Meyer, Lauritzen et al., Brocart, Leneveu et al., and Boileau et al. do not teach a gas generating material that can be used to actuate a vehicle occupant protection device, which includes greater than 2% by weight of the single base composition a stabilizer, which is a urea of an aromatic amine and a gas generating material that is free of an energetic plasticizer.

As discussed in item 2 of the Office Action, Schotthoefer et al. teach an air bag apparatus that includes a single-base propellant, such as nitrocellulose. Schotthoefer et al., however, do not teach that the single-base propellant further includes a stabilizer in addition to the nitrocellulose, that the stabilizer is a urea of an aromatic amine, and that the stabilizer is used in an amount of greater than 2% by weight of the single-base propellant.

Meyer teaches that a single-base powder can consist of nitrocellulose and stabilizers. Meyer further teaches that stabilizers can include diphenylurea, methyldiphenylurea, and sym-diethyldiphenylurea. Meyer, however, does not teach the weight % of stabilizer that is used with the nitrocellulose or

that a combination of nitrocellulose and a stabilizer can be used as a single-base composition in a gas generating material for actuating a vehicle occupant protection device.

Lauritzen et al. teach a linear igniter for igniting a gas generant of an inflator. The igniter can be a solid rod of a mixture of nitrocellulose with 1 to 4% weight stabilizer. (Column 7, lines 4-9). The igniter can further include a cap comprising nitrocellulose and up to 2% of a stabilizer, such as diphenylamine or ethylcentralite. Lauritzen et al. further teaches that suitable gas generating materials are found in U.S. Patent No. 4,203,787 and U.S. Patent No. 4,369,079. These patents teach respectively that the gas generating material can be azide based and azobitetrazole based. Thus, Lauritzen et al. teach only that the igniter composition can include nitrocellulose and a stabilizer not the gas generating material.

Additionally, there is nothing in Lauritzen et al. that suggests the igniter composition of Lauritzen can be used as a gas generating material. Thus, Lauritzen et al. suggests adding a stabilizer to a nitrocellulose material that can be used as an igniter for igniting a gas generating material, Lauritzen et al. cannot be relied on to show that a gas generating material for actuating a vehicle occupant protection device can include nitrocellulose and greater than 2% by weight of a stabilizer.

Brocart teaches an ignition device for igniting explosive charges, particularly explosive charges in combustible

cartridge cases and solid propellant missiles. (Column 1, lines 4-6). Brocart further teaches that the igniter can comprise nitrocellulose, 5-15% binder, and 2-3% centralite.

Brocart, however, do not teach using 2-3% centralite and nitrocellulose for a gas generating material that is used to actuate a vehicle occupant protection device. An igniter device for igniting an explosive charge is not a gas generating material for actuating a vehicle occupant protection device.

Leneveau et al. teach a fragmentable charge that includes nitrocellulose coated with a layer of polyvinyl nitrate, a centralite, and a plasticizer. (Column 2, lines 50-68). The centralite can comprise 2%.

Leveneau et al. do not teach that the centralite can be added to a single base composition of a gas generating material for actuating a vehicle occupant protection device. The composition in Leveneau et al. is for a fragmentable charge. There is no suggestion in Leveneau et al. that one skilled in the art would use a fragmentable charge as a gas generating material for actuating a vehicle occupant protection device.

Boileau et al. teach a single base composition having good resistance to moisture aging and moisture. The single base composition comprises nitrocellulose, a stabilizer, and zinc carbonate. In both Examples 1 and 2, Boileau et al. teaches using only 1.2% stabilizer. Boileau et al. do not suggest using an amount of stabilizer greater than 2% in a gas

generating material for actuating a vehicle occupant protection device.

The Office Action suggests that heat can degrade the amount of stabilizer in the single base composition over time. Boileau et al. however do not teach increasing the amount of stabilizer to offset the amount that degrades. Boileau et al. suggests adding an amount of zirconium carbonate. Thus, Boileau only suggests to one skilled in the art that zinc carbonate can be added to a single base composition that includes 1.2% diphenylamine.

The Office Action further argues that one skilled in the art looking at Lauritzen et al. and Boileau et al. would realize to vary the amount of stabilizer for a single base composition for a gas generating material depending on the heat expected and length of time. Lauritzen et al. and Boileau et al. do not suggest this. Lauritzen et al. as noted above only suggest varying the amount of stabilizer for an ignition material. Boileau et al. do not suggest varying the amount of stabilizer, but adding zinc carbonate to the ignition material.

Thus, although Schotthoefer et al. teach the use of a single-base propellant for a gas generating material of an air bag, Schotthoefer do not teach adding a stabilizer. Only Boileau et al. teaches adding a stabilizer to a single base composition used as a gas generating material for an air bag. Boileau et al., however, teaches using only 1.2% diphenylamine. The other references, i.e., Lauritzen et al.,

Brocart, Leneveu et al., teach only adding greater than 2% stabilizer to ignition materials and fragmentable charges.

Thus, Schotthoefer et al. in view of Meyer, Lauritzen et al., Brocart, Leneveu et al., and Boileau et al. do not teach or suggest all of the limitations of claim 1 therefore allowance of claim 1 is respectfully requested.

Claims 2-4 depend either directly or indirectly from claim 1 and therefore should be allowed in view of the aforementioned deficiencies of the rejection discussed with respect to claim 1.

Claim 5 contains limitations similar to claim 1 and should therefore be allowed in view of the aforementioned deficiencies discussed with respect to the rejection of claim 1.

Claims 6 and 7 depend directly from claim 5 and therefore should be allowed in view of the aforementioned deficiencies of the rejection discussed with respect to claim 1.

Claim 8 contains limitations similar to claim 5 and therefore should be allowed in view of the aforementioned deficiencies discussed with respect to the rejection of claim 1.

In view of the foregoing, it is respectfully submitted that the above-identified application is in condition for allowance, and allowance of the above-identified application is respectfully requested.

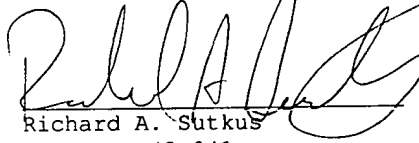
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Attached hereto is a marked-up version of the changes made by the present amendment. The attached page is captioned

"AMENDED CLAIMS WITH MARKINGS."

Please charge any deficiencies or credit any overpayment in the fees for this amendment to our Deposit Account No. 20-0090.

Respectfully submitted,



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AMENDED CLAIMS WITH MARKINGS

Claim 1 has been amended as follows:

1. (Twice amended) An apparatus comprising;
a vehicle occupant protection device; ~~and~~
a gas generating material, which upon combustion produces a gas product that actuates said vehicle occupant protection device; said gas generating material comprising a single-base composition that includes greater than 2%, by weight of the single-base composition, stabilizer, wherein said stabilizer is a urea of an aromatic amine, said gas generating material being free of an energetic plasticizer and;
an ignition material for igniting the gas generating material.

Claim 5 has been amended as follows:

Please amend claim 5 as follows:

5. (Twice amended) An apparatus comprising;
a vehicle occupant protection device and a gas generating material, which upon combustion produces a gas product that actuates the vehicle occupant protection device, and an ignition material for igniting the gas generating material, the gas generating material comprising a single-base composition and being free of an energetic plasticizer;
about 90 to about 95% by weight of the single-base composition being nitrocellulose,

about 3% to about 5% by weight of the single-base composition being a urea of an aromatic amine, and
less than about 5% by weight of the single-base composition being a non-energetic plasticizer.

Claim 8 has been amended as follows:

8. (Amended) An apparatus comprising;
a vehicle occupant protection device; ~~and~~
a gas generating material, which upon combustion produces a gas product that actuates said vehicle occupant protection device; said gas generating material consisting essentially of a single-base composition, said single-base composition including greater than 2%, by weight of the single-base composition, stabilizer, wherein said stabilizer is a urea of an aromatic amine; and
an ignition material for igniting the gas generating material.